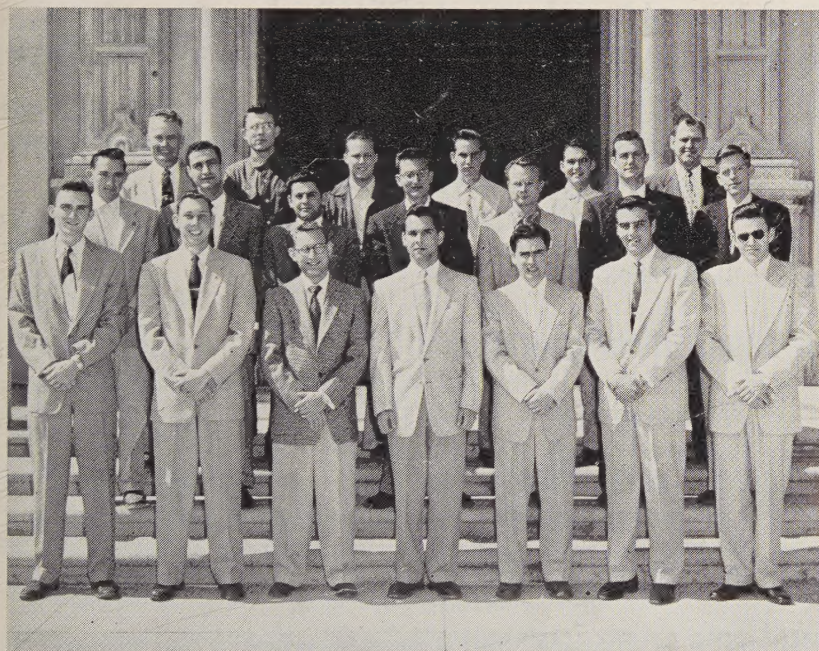


PROFESSIONAL ENGINEER

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M. E. McIVER, Editor

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How Deep Is the Interest in Ethics?

Major engineering societies have given a great deal of attention to the subject of "professional ethics"—aroused no doubt by the symposium on "Ethical Standards and Professional Conduct" published in *The Annals* (January, 1955) of The American Academy of Political and Social Science. The recurrence of the subject on the programs of the societies and in their national publications is clear proof that interest in ethical standards is widespread; it cannot be assumed that the interest is necessarily as *deep* as it is *wide*. The question we raise here is: "How searching will the new studies of ethics and principles of professional conduct prove to be?"

American Association of Engineers was the society to which the American Academy of Political and Social Science delegated the task of preparing engineering's statement for the symposium. This was logical for two reasons. First, American Association of Engineers speaks for all branches of engineering. Second, three members of American Association of Engineers, who had worked through A.A.E. to crystallize ethical ideals in code and enunciate specific principles of professional conduct, were chosen by the American Academy of Political and Social Science to state engineering's position in the first symposium on "ethical standards and professional conduct" published in May, 1922. Thus, in preparation of the statement for the 1955 symposium, American Association of Engineers had an opportunity to review the achievements of engineering societies in the field of ethics in the early 20's and measure progress made since that time. Because of interest aroused by the article in *The Annals*, American Association of Engineers has been asked to send representatives to a number of society meetings, speakers authorized to amplify statements made in the article in *The Annals*. This has not been practicable, but in one case A.A.E. prepared a message to be read at the meeting. It has not been possible to supply copies of this written message to the scores of society representatives who have written to A.A.E. requesting them. Instead we shall publish the message in this issue of PROFESSIONAL ENGINEER.

Although the interest in ethics manifested by engineering societies since the publication of the symposium is gratifying, we are unable to find that engineering is yet tackling its real problems in the field of ethics.

the article in *The Annals*, A.A.E. set forth two major weaknesses of the profession. It showed that "although engineering has made measurable progress in defining professionalism and recognizing its ethical obligations, and also in reducing these first broad concepts to relatively 'specific' principles of professional conduct . . ."

1. Scant progress has been made in the establishment of agencies to interpret, apply, and enforce these principles, largely because engineering has no single agency, comparable to American Bar or American Medical Association, empowered to state specific principles governing the whole profession, and to interpret, apply, and enforce these principles, and
2. Engineering is sufficiently baffled by unsolved problems, (some of which appear to be new because they arise in new situations) that it has not taken more than a superficial look at appallingly serious ethical obligations inherent in engineering's responsibility for the effect on society of certain new technological developments.

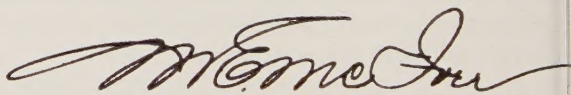
Engineering's "specific principles of professional conduct" are really gentlemen's agreements to refrain from throat cutting. Theoretically they are binding upon individuals and groups (employers and employees, competitive engineering companies, etc.) and to refrain from certain specified "unfair practices" which the societies in officially adopted codes have declared "unethical." The fiat of societies may help to crystalize sentiment against harmful practices, but it is only when this judgment is accepted by an overwhelming majority of members of the profession that such practices are really "unethical." Intermittent periods of feverish interest in ethics among society leaders will not, therefore, serve to set up meaningful codes. There must be systematic, unremitting educational campaigns to make all members of the profession aware of the viciousness of certain practices and to induce them to outlaw such conduct. In chapter and section meetings, let there be discussion of hypothetical or real cases involving the specific principles of professional conduct enunciated by the society. Enforcement of canons and codes depends primarily upon acceptance, and acceptance can be secured by discussion at "plain member level" of the harmfulness of practices which are banned.

Of course, there will be engineers who will flout these principles of professional conduct no matter how strong the consensus which establishes them. If the societies are *deeply* interested, let them consider the adequacy of whatever punitive measures are authorized in their constitutions and by-laws. Let them investigate also the authority vested in State Boards of Engineering Examiners. Those boards now have statutory power to punish registrants guilty of dishonest or "unprofessional" conduct or proved to be incompetent. It is a dormant power, so long as it is not implemented. Few of the boards have funds to cover a staff capable of detecting unethical

or unprofessional conduct and in very rare cases have they had the voluntary assistance of engineers or engineering societies in building a case against offenders or in actual prosecution. The depth of society interest in ethics is pretty well gauged by the extent to which they are willing back the play of state boards of engineering examiners. This is such a practical step that failure of the societies to bring charges against known offenders and appear as witnesses is almost conclusive proof that interest in ethics is still academic—or in the “greeting card” stage, one in which everyone feels that he has done his stint for ethics when he has a framed copy of canons or code in evidence in his office.

If any of the engineering codes of ethics or principles of professional conduct covers the intricate ethical questions involved in the relationship of engineering societies, one to another, it has not come to our attention. If the societies are going deeply into the problems of ethics they will be in better position to admonish their members if they recognize and forswear certain questionable tactics employed in their dealings with other societies. A code of ethics or a clear statement of principles of professional conduct for the societies to govern their own activities might be a rewarding project.

Finally, the societies should incorporate in their discussions of ethics the highly controversial subject of loyalty. They should bring out for discussion the intimation which has appeared too often in the press that there is some necessary conflict between “nationalism” and “universalism” which scientists and engineers must resolve according to the dictates of a special type of “ethics” which ranks above the loyalty expected of engineers in ordinary relationships. It is argued that those who deal with electronics, for example, recognize a superior obligation to exchange ideas freely with other scientists which transcends the pledges of secrecy imposed upon those who work on “classified” projects. If the societies are deeply interested in the ethics of engineers, let them face problems of this magnitude and help to clear up some of the obscure or purposely vague theories that now seem to invalidate old fashioned, but we hope not outmoded, patriotism.


National Secretary

*Engineering Ethics**

H. A. Wagner, Chairman, Committee on Professional Ethics

ENGINEERING is a profession, not a business or trade, principally because of the fiduciary relationship which exists between its members and society. Erudition is only a secondary factor, because society, not possessed of the engineer's knowledge of basic science and his understanding of specialized principles of technology, must accept on faith his recommendations and performance. No one has ever epitomized this relationship more effectively than did Justice Cardozo when he said:

Many forms of conduct permissible in a workaday world for those acting at arm's length, are forbidden to those bound by fiduciary ties. A trustee is held to something stricter than the morals of the market place. Not honesty alone, but the punctilio of an honor the most sensitive, is then the standard of behavior. This is also the essence of engineering's ethics.

In another way, the very nature of a profession lays upon engineers peculiar ethical obligations. Every engineer, it is said, is a debtor to his profession. An engineer who measures up to this ethical obligation must abjure every act which might conceivably bring discredit to his profession.

Finally, the fraternalism which is inherent in professions makes every engineer, in a sense, his brother's keeper. That fraternalism not only forbids conduct hurtful to his professional brothers; it is a positive force, requiring that each member strive sincerely to promote the welfare of other members of his profession.

These are the ethical principles that every engineer theoretically accepts. The philosophers have a name for them—the *summum bonum*, the ultimate aim or ideal. Specific codes of ethics and principles of professional conduct are based on these accepted aims. In a positive way they demand of engineers conduct which advances the *summum bonum*, and forbid acts which, though not necessarily inherently bad, conflict with the profession's intrinsic obligations. These specific principles vary from time to time. They are enunciated as conditions arise which seem to demand restraints upon members of the profession in order that they may faithfully serve or advance the "*summum bonum*." As the profession tries to interpret the basic aim in specific principles of professional conduct, the unanimity which marks devotion to the general aim is dissipated.

Morris L. Cooke, more than thirty years ago, said very simply and concretely what I have just expressed in abstract form. In *PROFESSIONAL ENGINEER* November, 1920, Mr. Cooke wrote:

Without getting into the realm of philosophical hairsplitting,

*Footnote: Prepared for and read at the February meeting of American Institute of Electrical Engineers.

we may say that ethical conduct is such as has received more or less general sanction. This means that conduct which at one time and place may receive very generous approval at another time or in a different locality may be generally considered reprehensible. So that the master test as to whether conduct is ethical or not depends largely on what people generally—and of course I mean well-intentioned people—think about it. That to have an individual or even a group agitate for certain reform has a value should go without saying. In fact, most improvements are brought about in this way. But these higher standards only become the rules for conduct when through education they have become accepted as proper by a sufficiently large or influential element within the given constituency. The point I want to make is that the writing out of a code or set of rules is useful only in establishing good conduct when such injunctions are so phrased as to be accepted as reasonable by those whose conduct they are intended to regulate. Neither the wisdom nor the exalted character displayed in the text is the test. The acceptance by the community is what makes the conduct ethical or not . . . our engineering practices are ethical or not as they conform to what may be called the best sense of the profession. Conduct is not necessarily unethical because it goes counter to a written code or even because it does not meet the best judgment of a practice committee. This is a point which is absolutely necessary to bear in mind, because codes and interpretations which do not conform to an existing sentiment or which of themselves fail to carry their fairness and soundness may easily be worse than futile.

In order to bring specific practices in line with the universally accepted fundamentals of ethics it is necessary to do these things:

Some agency, respected and trusted by all engineers, must examine professional practices and enunciate specific principles of professional conduct in line with fundamental ethics;

That agency must by every possible means appeal to members of the profession for acceptance of these principles and adherence to them, until through acceptance by an overwhelming majority of engineers they become binding upon the profession;

This agency must have disciplinary power which will enable it to force compliance from the recalcitrants who resist restraints because they do not truly understand or accept the inherent ethical obligations imposed by membership in a profession.

Medicine, law, and dentistry have slowly established canons of ethics ruling out practices hurtful to each profession or its members or inconsistent with fundamental obligations to society. No "principle of professional conduct" has ever been effective until through incessant educational campaigns it has been accepted by the constituency affected by it, except

where it could be shown that there existed such real and present public danger as to justify statutory regulation by the state. These three professions are fortunate in that each has an inclusive national organization truly representative of all members and powerful enough to reach all members of the profession and establish the consensus. Each directly, or through constituent state societies, has power to penalize violators of established canons of ethics. For thirty-five years, since the American Institute of Electrical Engineers first formulated principles of professional conduct, scores of engineering societies have labored concurrently, but not with unity, to implement the fundamentals of ethics which all engineers theoretically indorse. Through one or another "joint agency" the societies have tried to coordinate their campaigns for higher standards of ethics and for definition of principles of professional conduct. In 1947 the Engineers Council for Professional Development synthesized in a single code principles which had been accepted by large numbers of societies. These canons of ethics have been adopted by approximately 50 societies out of engineering's more than one hundred national organizations. This development may be considered progress toward unanimity, but it falls far short of achieving the universal acceptance which, as Mr. Cooke points out, is essential to establishment of ethical principles. Engineering is hampered in this objective as in many others by its lack of a truly inclusive organization.

Ethics—Professionalism

Actually, the code is only an elaborated statement of the general principles of ethics which are synonymous with "professionalism." The ECFD code is probably as specific as can be devised by any agency whose authority rests upon delegated powers. It is doubtful that ECPD or any other joint agency, representing less than half the existing societies, would be permitted to draft specific principles outlawing certain modes of obtaining engineering engagements despite the flagrancy of such practices as payment of "finder fees," "kickbacks" and the services of "10 percenters" widely criticized in engineering journals.

Certainly loyalty to one's country is implied in the general concept of engineering as a "public service" profession. Is there a society today that dares formulate principles declaring unethical the refusal of any engineer employed by the government to testify before a Congressional Committee in regard to his alleged membership in a subversive organization? Has ECPD the authority to incorporate in its code a statement that it is unethical for any engineer, whose very membership in a profession requires loyalty, to belong to an organization which advocates overthrow of the government by violence?

Can the ECPD scrutinize the relationship of engineering societies and define unethical practice in their dealings one with another? Is there any

agency which can even reprimand a society which belittles another reputable engineering organization and publishes untrue or misleading statements concerning the other organization?

Many societies today are working to establish the principle that competitive bidding for engineering engagements is unethical. Until an authoritative body has clearly enunciated such a principle the practice may be criticized, but, as Mr. Cooke has pointed out it is not unethical until the principle has been stated and recognized as the consensus of the profession.

Ethics and Publicity

Rather generally engineers have approved the principle that "self-laudatory" publicity and advertising are unprofessional and hence unethical. Certainly from an economic standpoint, advertising is unwise. So long as all members of the profession refrain from using display advertising, overhead costs are lower than they would be if all the major engineering organizations competed in this method of increasing business. It is still difficult to identify as "self-laudatory" publicity emanating from a firm's own public relations department, because reader interest warrants much of the most potent publicity about vast engineering projects published in engineering journals, initiated strictly by the staff of such journals, but with skilled cooperation from the public relations department of the engineering organization featured.

Only an organization of the calibre of American Medical Association or American Bar Association can tackle unethical practice where it is most hurtful to society, to the profession and to engineers in private practice—at the top.

Only an inclusive organization can deal with the other danger zone—the growing chasm between engineers of employer and engineers of employee rank. Careful examination of the ECPD code shows how reluctant the profession is now to take a forthright stand on the issue of "unionism." Is the profession itself ready to say that unionism, which is predicated on the theory that employer and employee interests are in conflict and can be protected only by "collective bargaining," is in conflict with fraternalism, a basic ethical principle of professions? In an inclusive organization, one in which engineers in all stages of professional development are represented, this issue might be resolved. There is no agency today where employers and employees are fully and impartially represented that can tackle this problem.

It is in the field of enforcement of codes of professional conduct that engineering experiences its greatest handicap because of its lack of an inclusive organization. Even if such an organization existed, it would depend on punitive measures only to keep in line the relatively small number of recalcitrants. It is, as Mr. Cooke sagely observed, acceptance or rejection of an "ethical principle" by a majority of members of the pro-

fession that determines whether a practice is ethical or unethical. Under our present organizational set-up, each society must strive to bring its members in line with any principle enunciated by a joint agency. Since that is true, ECPD may only amplify the very broad principles on which the societies are agreed; it may not speak out against definite practices which violate broad ethical principles.

The societies may supplement the "canons" of ECPD. They may attempt to define the ethical principles involved in controversies, for example, which are rooted in the claims of employer and employees to patent rights and royalties growing out of scientific developments on a job. What, however, can the societies do to enforce principles after they are firmly established by ascertaining the consensus? What retributive forces can the societies let loose upon violators of ethical principles? Have the societies any punishment to mete out other than suspension or expulsion from membership? If suspension or expulsion is handled with utter secrecy, it can do little more than irritate the offender. Suspension or expulsion from one of the integrated state bar associations means restriction on practice. Expulsion from the American Medical Association is usually accompanied by such resounding publicity that it has virtually the same effect. The public recognizes the authoritative voice of the inclusive bar and medical associations and follows their lead.

Has any national engineering society, even secretly, suspended or expelled from membership engineers involved in the famous "10 percenter" cases? Has any engineer been publicly chastised by engineering societies for alliance with organizations dedicated to the task of overthrowing our form of government or for betraying important technological secrets and refusing to testify before congressional committees? Have the societies, individually or through joint agencies, taken a dynamic stand on the peculiar ethical issues arising from the obligation of professional men to serve society faithfully in a time when divided loyalty constitutes real and present danger to the nation?

Many of the issues labeled questions of ethics are in reality matters of expediency. The greatest heat is engendered by such controversies as that concerning the "ethics" of practice of engineering by corporations. A great deal is involved which may affect the future of engineering, and, hence, indirectly the welfare of society. Until it is the consensus of the profession that practice of engineering is inimical to the future development of engineering and the welfare of the nation, such practice is not unethical. Inasmuch as this problem is a matter of concern to only a relatively small segment of the profession—top ranking engineers engaged in private practice—there is little likelihood that it will evoke a great deal of interest among the great majority of engineers in public service and in industry on employee basis. It will be fought out in the societies because a majority of those affected are the dominant segment of those societies. Only if the societies are able to revise registration laws making practice

by corporations illegal will such practice be restrained—making practice by corporations illegal rather than merely “unethical.”

Only when engineers in every stage of professional development are fairly represented in one great organization capable of stating ethical principles and establishing the consensus will engineering be able to find and cure the cankers that are dividing and corrupting the profession. The organization will build its code, not on expediency and special interests but on recognition of the great characteristics of a profession: fraternity and service to society triumphant over self-interest.

*A New Look in Engineering Education**

Radical changes are ahead for the engineering profession in the next ten years if educators follow the recommendations made in a recent study of engineering education. The need for drastic revision of current curricula forms the basis of the final report of the American Society for Engineering Education's special Committee on Evaluation of Engineering Education. The report, which was adopted by the ASEE at its recent 62nd annual meeting, is the outcome of a searching two-year study sponsored and financed by the Engineering Foundation and the professional societies that make up the Engineers' Council for Professional Development.

Recent extraordinary advances in science and the necessity of applying these advances to future practice underscore the need for a new approach to engineering education if we are to turn out well-rounded graduates capable of becoming leaders as well as good engineers. This is the consensus of the ASEE Committee. Specifically, the Committee believes, engineering curricula must give more attention to the basic sciences, to the engineering sciences, and to humanistic-social studies.

Before 1940, says the report, a typical engineering curriculum served equally well for those needing specialized engineering training and for those with general professional interests. Today the situation is different. Electronic developments demand greater knowledge of physics on the part of electrical engineers. New structural problems arising in welding, in suspension bridge design, and in soil mechanics—to mention a few—emphasize the need for a more scientific background for civil engineers. Mechanical engineers, also, face new and difficult problems—in heat transfer, in fluid mechanics and, recently in jet propulsion. Metallurgy has changed from an art to a science based on physical chemistry and the physics of the solid state.

These developments would inevitably have changed the character of engineering education even without the violent impact of nuclear discoveries to hasten the process. The development of nuclear power, which is already having a revolutionary effect on engineering practice, must soon have an equally profound effect on engineering education. Even now there is ap

*A Release of the Engineering Foundation.

parent the need for study of new materials and for more knowledge of old materials, and for the development of basic information in such fields as neutron absorption, resistance to radiation bombardment, and special varieties of corrosion.

Present-day engineering curricula are also deficient in training engineers for research, a field in which they are increasingly needed, the report emphasizes. Before 1940, it notes, the percentage of engineers engaged in any type of research was small, with physicists carrying on most of the fundamental research in the engineering sciences. Since 1940, however, research physicists have had their interests directed toward nuclear problems to such an extent that research in vibration, fluid flow, plasticity, elasticity, electronics, engineering dynamics, and allied fields is now up to the engineer. "The leaders of the profession twenty-five years hence," in the opinion of the Committee, "must be engineers who are at no loss in interpreting, using, or contributing to the extension of engineering science." Typical present-day curricula, however, were not designed with such an objective in mind.

The average four-year undergraduate program is so inadequate, the ASEE Committee concluded, that an engineer cannot be trained in such a course to make effective use of modern knowledge of engineering science. It is even more improbable, the Committee believes, that an engineer with only the regular four-year college training can contribute effectively to engineering research. These conclusions are based on the reports of some fifty committees in leading engineering schools of the United States and Canada.

As a first step toward the goal of broader engineering education, the Committee recommends that curricula be broadly divided with two objectives in mind: (1) to supply engineering personnel for production, construction, operation, the sale, installation, and maintenance of equipment, and the like, and (2) to supply professional engineers and engineering scientists capable of interpreting for design purposes the data provided by research in the engineering sciences, and of advancing the engineering sciences by research.

These two broad types of curricula the Committee has designated "professional general" and "professional scientific." Both types of curricula include a thorough grounding in mathematics and courses in the principal engineering sciences. However, it is believed that the "scientific" curricula into physics and chemistry, especially atomic physics and physical chemistry, should go much more deeply than the "general" curricula and should develop the engineering science courses to make full use of the mathematical background provided. In addition, engineering analysis and design will be required for two or more years in the "scientific" curricula. In the "general" courses, on the other hand, one year of engineering analysis and design will be considered adequate. Another important point of difference is that the "general" courses would place greater emphasis on humanistic-social studies. The length of the curricula would be left to the judgment

of the institution involved and of the accreditation committee of the Engineers Council for Professional Development.

Initiated early in 1952 at the request of ECPD, the Committee on Evaluation of Engineering Education consisted of 38 leading educators working under the chairmanship of L. E. Grinter, dean of the Graduate School of the University of Florida. In sharing the sponsorship and financing of the project, the Engineering Foundation was as usual in the vanguard of an investigation that may have far-reaching effects on the profession. The committee's full report may be obtained from the secretary of the ASPE, Northwestern University, Evanston, Illinois.

Plant Engineers Organize

Members of Eleven clubs of Plant Engineers met in Chicago recently and formed a national society to be known as the American Institute of Plant Engineers. Because clubs are now being organized in Canada, Mexico and South America, the possibility of broadening the organization to include the Americas rather than limit it to the United States is being considered.

The objectives of the new organization, incorporated, not for profit, are to be to further the professional interests of the plant engineer and foster the development of this specialized branch of engineering to include the Americas.

Groups now organized or planning to organize, and incorporating the term plant engineer in their name or title are eligible for charter membership. Individual plant engineers to whom local chapter membership is now available are eligible for membership-at-large. Headquarters of the Institute are at 111 West Washington Street, Chicago, Ill.

A.A.E. Insurance

Two A.A.E. members recently had accidents, fortunately not of the serious kind on which their gift insurance—included with membership in the Association—pays off. Although not the "death or dismemberment" kind of accident, both were serious enough to entail expensive medical and hospital care.

One of the members—let's call him Mr. W for his wisdom—had taken advantage of the opportunity to get the special insurance available to A.A.E. members at a phenomenally low rate. This is accident insurance, covering expenditure for medical and hospital care up to \$500, and it costs A.A.E. members only \$14.00 a year.

Unfortunately, the other member—whom we will call Mr. B, because he was perhaps too busy to look into the advantages of this other type of insurance—was not covered with hospital and medical insurance in accidents less serious than dismemberment or death.

Mr. W, of course, sent in his claim for his hospital and doctor bills and immediately the company sent him a check for \$500. Mr. W was mu

impressed with the promptness and courtesy with which the company handled his claim. Mr. B. of course was lucky that he could not qualify for the gift insurance, but unlucky in that he had not paid the small sum of \$14.00 which would have extended his coverage to the kind of accident which is much more common—the sneaky little old “slip on a rug” or “trip over the vacuum cleaner left on the basement stairs for no good reason” kind of accident which does not dismember anything but his bank balance. Headquarters congratulated Mr. B on his failure to qualify and mildly chastized him for not having had the foresight (which is so often unhappily inferior to hindsight) to take advantage of the extra policy at a practically nominal group rate. There is a moral to this tale; a moral so obvious that it would be dull to draw it, but it is told beautifully in an old book found on the parlor table of many homes in a story entitled the “wise and foolish virgins.”

In order that every member may be given opportunity to “get wise” we reprint here the full story of the “Personal Accident Protection” policy offered to A.A.E. members at the group rate of \$14.00 a year. When you make out your check for your annual dues this fall, why not include \$14.00 for the special protection?

A Special Insurance Benefit Available to A.A.E. Members

Through arrangements made by your Association with the General Accident Fire & Life Assurance Corporation, Philadelphia, Pennsylvania, there is now available to our members a special type of Personal Accident Protection.

The policy, under which this special protection is provided, pays *IN FULL*—up to a limit of \$500 for *EACH* accident—the actual cost of any form of medical, hospital, surgical, nurse, x-ray and other miscellaneous medical expenses resulting from—

1. any accident sustained by an insured member while engaged in performing the duties of a Professional Engineer; or,
2. any non-occupational accident.

This policy is offered to you at the low cost of \$14.00 a year, and should particularly appeal to A.A.E. members.

IT IS IMPORTANT TO REALIZE THAT THIS POLICY PAYS EVERY DOLLAR OF COVERED EXPENSE UP TO THE FULL LIMIT OF \$500 FOR EACH ACCIDENT . . . THERE IS NO DEDUCTIBLE PROVISION.

The opportunity to obtain this special Personal Accident Insurance is another service obtainable to you through your membership in the American Association of Engineers. Here is a policy free from red tape and one under which payment of claims is assured. Your policy will be made effective from the day your application and check are received by the Insurance Company.

John H. Wilson Commended

The Department of the Air Force has announced that John H. Wilson of San Mateo, California, has been presented the Air Force Superior Accomplishment Award. Mr. Wilson was presented the award by Colonel Edwin M. Eads, AF Installations Representative, South Pacific Region, at ceremonies held recently at 130 Sutter Street, San Francisco. Approximately fifty officers and civilians of the Army and Air Force attended the ceremony.

The award, which was approved for Mr. Wilson by the Office, Secretary of Air, was based on an outstanding efficiency rating.

Mr. Wilson is the Deputy of AF Installations Representative, and as such, monitors Air Force new construction activities throughout the southwest portion of the United States and Pacific Ocean Islands valued at approximately 350 million dollars. His exceptional ability to solve engineering problems regarding this work, and the commendable manner in which he performed his other duties, won him the award.

He began his career in 1936 at the Picatinny Arsenal, Dover, New Jersey, and this year he starts his nineteenth year of government Service. During this time he has held a number of top engineering positions both in the United States and abroad. During the early years of WW II he went to Brazil where he was US Army Corps of Engineers representative for construction of seven airports. At the end of WW II he returned to the U.S. and was employed at Millville Air Force Base, New Jersey, and at the Home Air Depot, Rome, New York. Following this, he went to Japan, where he was Civilian Chief of the Engineering Division for the Eastern Air Forces. He accepted a position as Deputy Director of Installations for Headquarters Command, Washington, D.C., when he returned to the states early in 1952. In November, 1952, he assumed his present position as Deputy AFIR, and has been in San Francisco since that time.

He is a graduate of Boonton High School, Boonton, New Jersey; Morris County Jr. College, Morristown, New Jersey; and has a Bachelor of Science degree in civil engineering from Tri-State College, Angola, Indiana.

He holds the Air Force, "Commendation for Meritorious Civilian Service," for his work in Japan during the Korean hostilities.

He is a member of the San Mateo B.P.O. Elks Lodge No. 1112, San Francisco Post of the Society of the American Military Engineers, and the American Association of Engineers.

New Intimations of Immortality

M. E. McIver, Secretary

SLIGHT and vague as is our knowledge of electronics and nuclear fission, it has made all of us increasingly aware of the reality of invisible forces and of their impact on our lives. If we are intensely materialistic we see only opportunities for profit or a threat to our existence in the developments of pure and applied science which have made it possible for men to harness the energy infinitesimally small but illimitably potent factors. We cringe under the threat of forces which we do not understand but which we do fear. If we shake off fear and dread, the spiritual in all of us will draw parallels which are comforting. There are other forces, we will see, which operate beneficently but which are as imperceptible, as impalpable, and as potent as those captured by the science of electronics and made manifest to us in sensitive devices.

There are indefinable radiations from great personalities which sustain and stimulate us even though they cannot be identified by any of the physical senses. American Association of Engineers was conceived by men who were actuated by good impulses which, for lack of a better word, we call "fraternalism". A.A.E. has survived only because it is an embodiment of that force. The physical presence of these men in A.A.E. meetings and conferences and committees is not essential; their good will, or perhaps it would be better to call it their "will for good", flows ceaselessly through the organization. Unlike the impulses which emanate from radio transmitters and which cease when the transmitter stops sending out waves, the will for good emanating from great personalities is infinite, because the dynamic kindness of these men is endlessly relayed by others who successively receive and send these impulses. Without wandering off into purely metaphysical fields as yet unexplored and certainly not understood, we should be able to see "intimations of immortality" in the endlessly beneficent influence of men of good will.

Certainly this is demonstrable in the life and in the death—of such a man as Dr. Gustav Egloff. Materialists will understand the indestructibility of his great mind and spirit only in the limited demonstration of his influence upon the oil industry; in pure and applied science his achievements will continue to affect constructively those who carry on his work. But this was not his only contribution. He radiated creative imagination, courage, kindness, and honesty. Must we believe that these great gifts ended with his death? Must there be limits of time or space on such forces once set in motion? In his lifetime we were strengthened by our constant awareness of his interest in the work of A.A.E.; we were animated by his imagination and emboldened by his daring, simply because we knew that the force existed, felt it, although his stupendous schedule seldom permitted him to be with us in person. Who shall say that his death instantly terminated the flow of his remarkable personality, when his physical absence



Col. Webster L. Benham



Dr. Gustav Egloff

in his lifetime had no such destructive effect? We believe that the qualities that made this man great (and which underlay his scientific achievements) are just as real a force today as the influence he still wields in death over the industry he served.

Not every man is as highly endowed as Dr. Egloff—enough that his will for good in the universe is transmitted by a sort of extrasensory type of communication when he is not physically near. Many men have this gift in a lesser degree. Dr. Egloff's death only causes us to think more penetratingly, to think perhaps with our hearts, and realize this comforting truth, or at least to embody the conviction in words. It is an idea that has occurred to us frequently as we have heard, one by one, of the passing of other great-hearted members of this Association, men who have always seemed near even when far away.

Webster L. Benham, past president of A.A.E., is one such man. Like Dr. Egloff he was tireless in service to his profession. It is impossible to believe that the great good will he generated is terminated by his death. He is a clear example of the persistence of an ideal. His son, David Blair Benham, who now heads the firm of Benham Engineering Company of Oklahoma City, in joining A.A.E. spoke of his father's devotion to and faith in the organization, and of his own desire to carry on the family tradition of service to the profession. Many men have been inspired to such service by Web Benham's enthusiasm; each becomes a relay station for perpetuation of the force he engendered.

At New Mexico A & M College many young engineers became imbued with the idealism which emanated steadily from Doctor D. S. Robbins during the many years he served as dean of engineering. His was the influence of a scholar and a gentleman, and the influence has been widened without loss of intensity as his boys have gone out in the world to serve according to his standards. Such warmth of friendliness issued from him that the mere thought of him seemed to bring him near—like the delicious pungency of pine needles in the north woods, remembered with such nostalgia that one has the illusion of its actual presence in a stuffy, sultry city office. The limitations imposed by both geography and death are futile against this magnificent personality.

Wallace R. Harris, another past president of A.A.E., had leadership capacities that stemmed directly from his high octane enthusiasm and the staying power of his convictions. Highly perceptive, supercharged with energy, he made dramatic to men of lesser imagination the ideals for which he fought. There are a great many younger engineers whose devotion to the engineering profession was aroused by this man's power to radiate idealism.

Joe Beatty Butler, professor and chairman of the Civil Engineering Department at the Missouri School of Mines, was as sincere a devotee. He was the practical intellectual, who saw the faults as well as the virtues of his profession. He sought for the flaws; he worked tirelessly to correct them. This was a man on whom people counted; whatever he undertook would be done well, almost meticulously. The mention of his name evokes a feeling of his utter dependability. It will be hard for those who worked with him to appease their own consciences if they are ever tempted to shirk or slight jobs that should be done to sustain or raise the standards of the profession.

L. K. Sherman, who was president of the Association when it tackled certain misconceptions long cherished by the profession—the notion that group action of any kind to improve engineering compensation was inconsistent with basic principles of professional conduct. Mr. Sherman held that prevailing standards of pay for engineers employed by the railroads were grossly out of scale with wages paid non-professional workers and with responsibilities carried by professional employees. He was already an established consultant, wholly altruistic in this endeavor. It was, in his opinion, a question of simple justice, easily demonstrable by presentation of facts. No threat of reprisals was involved. He and his associates, equally eminent consultants, appeared before the U.S. Railway Wage Board to plead the cause of engineers employed by the railroads. His motives and his tactics were unimpeachable. There was something of the tradition of days of chivalry in this crusade and in every cause he championed. Expediency was never, in his opinion, justification for conduct incompatible with professional standards. Men loved in him what the Knights of the Round Table worshipped in King Arthur. It has inspired in many of his

associates the same selfless devotion to justice; through them it will be transmitted to another generation.

In every state and local society, in every national organization there are men like these whose personalities transcend the little dot of time, the little spot of space in which many men send forth their rays or waves of influence. They disprove the allegation of cynics that the good men do it interred with their bones, and show instead that the "will for good" which radiates from great men is immortal in the truest sense—a continuing and constructive force in the universe.

Herbert Lucius Whittemore

Old members of A.A.E. will be saddened by news of the death of Herbert Lucius Whittemore of Washington, D.C. He will be remembered as one of the mainstays of the Washington, D.C. Chapter of A.A.E. Headquarters knew him as a resourceful, consistent, and friendly member who could be counted on for chapter plans that had the virtue of being at the same time substantial and novel. He drew the chapter into civic projects and identified it with other agencies interested in the welfare of the city.

Matthew Thomas Martin

After a long illness, Matthew Thomas Martin of Minneapolis, Minnesota, died October 18, 1954, after a long illness. Mrs. Martin has written the Association that he spoke of A.A.E. often during the last weeks of his illness and that his membership card was placed in his memorial book.

Frank T. Payne

Frank T. Payne of New Orleans, La. died on July 6, 1955. Mr. Payne was a 1905 graduate of Tulane University and was honored by the University in June by being awarded a second diploma, commemorating the 50th anniversary of his graduation from the school of engineering. He had served the university for 22 years, starting soon after graduation as superintendent of the newly constructed gymnasium. He had retired as maintenance supervisor of Tulane University's veterans housing project in 1954. He was a major with the U.S. Army Engineering Corps.

Walter Owen Washington

Another of A.A.E.'s firmest friends, Walter Owen Washington of Brownsville, Texas, succumbed to a heart condition on July 4th which had hampered him in his work for many months.

Mr. Washington was widely known throughout Texas and the Southwest and will be remembered by members of A.A.E. who attended conventions in the early days.

A native of Travis County, Mr. Washington was a graduate of the University of Texas, where he received his civil engineering degree, and later did graduate work there.

Among his interesting assignments were: service as construction engineer for Willacy County in water control and irrigations canals; supervision of the expansion of Lower Rio Grande Inter-nation Airport while acting as Brownsville's city engineer; supervising construction of Defense Plant Corporation synthetic rubber plants during World War II; pioneering many practices in concrete-cement highway building in the 20's and 30's while Cameron County engineer; captain in Army engineers in World War I. Since 1945 he has engaged in private practice in the firm of Washington and Ruff.

Change in Illinois Professional Engineering Act Favorable to "GI's"

One provision in the amended Illinois Professional Engineering Act makes a slight concession to engineers who, while in federal service with the armed forces, may have permitted their certificates of registration to lapse for more than 5 years. Before amendment the Act gave returned "GI's" only one year in which to have their certificates restored; the provision in the amended act extends the period of grace to two years. This is the text of the portion of Section 14, as amended in 1953, which applies to veterans:

However, any registered professional engineer whose certificate of registration has expired while he was engaged (1) in federal service on active duty with the armed forces of the United States including the United States Merchant Marine, or (2) in training or education under the supervision of the United States preliminary to induction into the military service, may have his certificate of registration restored without paying any lapsed renewal fees or restoration fee or passing any examination, if within two years after termination of such service, training or education, other than by dishonorable discharge, he furnishes the Department with an affidavit to the effect that he was so engaged and that his service, training, or education was so terminated.

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Front Pagers

A.A.E.'s ability to pick leaders is repeatedly confirmed by the honors which come from other agencies to its former officers and directors.

Donald M. Baker of Los Angeles, member of the firm of Ruscardon Engineers, was the only Western man among 8 winners in a nationwide competition recently conducted by the Urban Life Institute, an independent research organization devoted to urban planning. The main objective of the organization is to "stimulate plans and programs for the increased use of public transportation as a means to relieve congestion in the downtown areas." Mr. Baker had made a report in 1933 on mass rapid transit for Los Angeles including capital and operating costs and revenues. The report presented recommendations for a number of surface lines—subway and elevated—radiating from the downtown area to outlying population centers. The Certificate of Merit awarded him by the Urban Land Institute was in recognition of his services in connection with a survey of the "engineering and economic feasibility of a proposed monorail line from the San Fernando Valley to Long Beach."

On the last day of December, 1954, **Dean Gurdon M. Butler**, dean emeritus of the college of engineering at the University of Arizona, retired and, early in the new year, moved to Santa Ana, California where he will make his home and devote his time to his many fascinating avocations. One of these, gem collecting, was so closely integrated with his work at the University as to be virtually a "sub-vocation" instead of a real avocation. He was recognized as America's foremost gemologist.

Although retirement breaks official ties with the University, those who know Dean Butler are sure that wherever he is there will be always a "little bit of Arizona." During his 39 years with the University he was professor of mining engineering and dean, first of the combined schools of engineering and mining,

and after the two departments were separated in 1940, dean of the school of engineering. He was also director of the Arizona Bureau of Mines from 1918 to 1940.

Arizona's original registration law for engineers and architects was written by Dr. Butler and he served on the State Board of Technical registration from 1921 to 1951. Through the Engineering Council for Professional Development and through the National Council of State Boards of Engineering Examiners (of which he is a past president) he has done much to improve educational requirements of the registration laws and to standardize the procedure of accrediting engineering schools.

His civic services ranged from work with the Boy Scouts to distinguished service in coordinating training for army engineers and navy pilots on the University campus and chairmanship of Phoenix's first city planning commission.

Dean Butler has served A.A.E. as national director and national vice president, and has done outstanding work on those committees requiring vision, cultural attainments, and high ideals in service. His idealism is not, however, the wholly ethereal type—instead, he has a very practical understanding of the needs and longings of young engineers and of the temptations which beset them in their justifiable search for security. Always pleading their cause, Dr. Butler still did not condone remedial action inconsistent with high standards of professional conduct. In a harried universe he stands out as one of the few remaining examples of the breed of men once denoted by the term, "A gentleman and a scholar."

When James E. Hastain, Phoenix President of the Arizona Society of Professional Engineers, presented to Vi-

Housholder a bronze plaque designating him as "Arizona Engineer of the Year," Mr. Hastain said that the plaque, which was being awarded for the first time, was given to Mr. Housholder for "outstanding work as an engineer and for engineers, and for his outstanding contributions to community betterment." American Association of Engineers heartily congratulates the society on the good judgment reflected in its recognition of Vic Housholder's distinctive characteristics. In his work both "as an engineer" and "for engineers" Vic Housholder has won this sort of recognition in A.A.E., unofficial but nonetheless sincere, over a period of 25 years. He is a past president of American Association of Engineers, and is now a national director, and ever since he has been affiliated with A.A.E. he has been a mainstay of the Phoenix Chapter. Through the *Phoenix* Chapter of A.A.E. Vic Housholder has rendered his outstanding services to engineers and to the community. American Association of Engineers is deeply gratified that Mr. Housholder has received this splendid recognition from a state organization.

**Dr. Steinman, Life Member of A.A.E.,
Heads Academy of Sciences**

Dr. D. B. Steinman, internationally eminent bridge engineer and scientist, was elected President of the New York Academy of Sciences at the Annual Dinner of the Academy on December 4th. He succeeds Dr. George B. Pegram, distinguished scientist and Dean of the Graduate Faculties of Columbia University.

Dr. Steinman is a Life Fellow of the Academy and was one of the founders of its Section on Mathematics and Engineering. He is a Past President of the National Society of Professional Engineers, National Council of State Boards of Engineering Examiners, U. S. Council of the International Association of Bridge and Structural Engineering, American Association of Engineers, Structural Division of the American Society of Civil Engineers, American Bridge, Tunnel and Turnpike Association, New York State Society of Professional Engineers, Metro-

politan Section of the American Society of Civil Engineers, and other professional organizations. He has designed and built over 300 bridges on five continents, and six of his bridges have been honored in the Annual Artistic Bridge awards for the most beautiful bridges in America.

Dr. Steinman is the author of a number of well-known books on bridge engineering in addition to hundreds of scientific, mathematical, and technical papers and publications. He has twice received the Norman Medal, the highest award of the American Society of Civil Engineers. For his scientific and professional contributions and achievements he has received numerous honors and awards from engineering and scientific bodies in this country and abroad, and a number of decorations and honors from foreign countries.

Rebori Honored

Among the 42 architects honored by the American Institute of Architects at its 87th annual convention, in Minneapolis, June, 1955, by being named fellows of the society was one of A.A.E.'s distinguished members, **Andrew Rebori**, architect of Chicago. The award is made to members of A.I.A. who have for at least 10 years contributed to the advancement of the profession of architecture in design or in the science of construction, or by literature or educational service, or by service to the institute or any of its component organizations or by public service. Mr. Rebori was awarded a fellowship in recognition of his part in the construction and remodeling of large buildings in the Chicago area, and in particular for his genius as a designer.

George R. Fansett of Tucson, Arizona, a member of A.A.E. long associated with the Arizona Bureau of Mines at the University of Arizona, retired on July 1st. Graduated from Yale University in 1905, Mr. Fansett has practiced mining engineering over great areas of North and South America; his last assignment before joining the staff of the University of Arizona was with the Cerro de Pasco Mining Corporation in Peru.

Hundreds of miners are grateful to

Mr. Fansett for the extremely practical instructional material he has prepared on field tests for common metals. He has done graduate work at Columbia University, Brooklyn Polytechnic Institute, University of California, and the University of Washington. As new techniques developed Mr. Fansett added the improved testing techniques to his bulletins. Long before prospecting for radioactive minerals became a summer vacation stunt for school teachers and office boys, he was instructing Arizonians in the use of the Geiger counter. He is credited with teaching hundreds of unemployed men how to make enough money to keep their families fed and clothed during the depression through his leaflets on methods of finding and recovering gold. Here is a man who had a special genius for making technology understandable and its services to society appreciated by ordinary citizens.

Member No. 1 and his contemporaries will recall with enthusiasm a stout-hearted guy named **Ben Moreell**, who battled joyously for the things the young association championed. They will enjoy his article in a recent issue of **Readers' Digest** and they will find it thoroughly consistent with A.A.E. basic aims and objectives. This same Ben Moreell is the man whom the SEABEES honored for his leadership in the South Pacific during World War II. A very beautiful memorial volume, memorializing the almost incredible achievements of his SEABEES pays homage to their leader, Ben Moreell.

J. Lee Chambers, veteran engineer, and stalwart past president and treasurer of the Phoenix, Arizona, Chapter of A.A.E. retired on June 1st as county engineer because of serious eye trouble. His friends are optimistic, however, believing that "J. Lee" will stage another comeback, inasmuch as he has retired

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once before. That was in 1950 when he reached the age at which retirement was mandatory for employees of the county engineering department. Mr. Chambers then went into private practice, but was drafted into public service again, called back to become county superintendent of streets. The job grew rapidly during his administration, so that instead of supervising 60 to 75 projects he had 250 under his direction, and subordinates regularly employed under his supervision quadrupled in number. A.A.E. chapter members feel sure that J. Lee will come back triumphant from eye surgery and out of retirement again—as indefatigable as Sara Bernhardt who set up something of a record in retirements and returns from retirement.

The Engineer is one of the most highly trained, practical, efficient, hard-working, creative indispensable servants of society. Of all professional men, he is the greatest contributor to the economic progress and wealth of the community.

Phoenix

Phoenix Chapter reports that its bi-weekly luncheon meetings have been exceptionally interesting and well attended this year, which appears to be a modest statement of the situation as the roster of distinguished speakers is scanned. Vic Housholder can really discover the lions in his area and persuade them to come peacefully to his lair. For instance, Frank Lloyd Wright, trail blazer for architects, addressed the group and drew an attendance of 132, in March. In May, the big attraction was Richard T. Silberman, president of Kay Lab, of San Diego, makers of electronics and precision instruments. Mr. Silberman told the chapter that Arizona and California are rapidly becoming leading centers of electronic activity which he said is "the fastest growing segment of our economy."

Long Beach

Celebrating the 25th anniversary of the chartering of Long Beach Junior College Student Chapter of A.A.E., the senior chapter staged a reunion of its own members and the alumni of the junior college, on June 3rd at the Monte Vista Lodge in Long Beach with 177 in attendance, of the 300 (scattered from Alaska to Casa Blanca) who had been notified of the meeting. They came from places as remote as New York, Alabama, and Texas. So successful was the meeting that a great many members clamored to make it an annual affair. Others have insisted that it will be more zestful if the meetings recur at five year intervals, and a committee is examining both proposals.

John Marriner seems to have been the "man in charge" assisted by an able committee consisting of Noble Hines, Larry Whiteneck, Roy Whites, Pang Wheaton, and Paul Harder.

National Headquarters is indeed sorry that it could not have been represented, but it seemed quite impossible due to moving headquarters offices to more suitable quarters in the same building where the Association has been quartered for more than twenty-five years.

Chaffey College

Arthur Flum is again advisor of Chaffey College Student Chapter, A.A.E., and reports as follows:

Possibly because they know I enjoy it so much (and maybe because I started it in the first place) they have me advising the Engineers Club again along with Mr. Ray O. Webb, a wonderful fellow and engineering drawing instructor. I have stayed just a bit more in the background, and thus you haven't heard from me. Prompted by your generous invitation—and the pleasant memory of the wonderful spreads you've given our club in your publication during past years—we've gotten together some material which you may be able to use (including the check for the dues!) The names of the men in the picture I am including on an accompanying slip.

Now for a run-down of this year's activities. First semester we took the following field trips:

- a. Lincoln-Mercury Assembly Plant
- b. Goodyear Rubber Company
- c. American Potash and Chemical Company at Trona, California
- d. Mines and mills in the vicinity of Randsburg, a historical mining region

We also had the usual monthly dinner meetings with speakers from the various fields of engineering and science.

The enclosed duplicated sheet sets down our plan for this current semester as drawn up by our executive committee (Their names appear on the bottom of the sheet and you may wish to use them).

Interest is mighty high now over our plans for the annual four-day spring vacation field trip, outlined on the list. The Eagle Mountain Mine is where the new Kaiser Steel Plant at Fontana, fifteen miles east of here, gets all of its iron ore. The Hayfield Pumping Station and Intake Pump Lift of Lake Havasu are parts of the great Metropolitan Aqueduct, 324 miles long (we'll follow it to the river) and 109 miles of tunnels (we may crawl through one). Parker, Davis and Hoover Dams are tremendous installations, which we have arranged to tour. We'll also go over into Arizona to visit some mining properties (We don't expect

to discover any really high-grade uranium mines!) Returning home via Las Vegas we'll try to stay clear of devices to separate us from the little money which will remain by then.

We plan to camp out all along the way, each night on the river or one of the lakes, and cook our own food (!) Previous years have seen previous trips considerably like this one—and they've always been great fun as well as adding a great deal of valuable information and general background to our engineering students. This also breaks the routine of what is a mighty hard course.

Well, I hope this gives you what you need. I hope too that spring is just around the corner. When you have a minute drop us a line. Incidentally, I'd better send you a list of our membership. You will recall that you were kind enough to send us blank membership cards so that at the first of the school year when we initiated our new members we could hand out their membership cards at the first meeting. If you can remember, and if it still is in order, you might send us about forty blank cards for use next fall (don't you think I'm really looking forward for a change!).

And although it may take a little longer than this letter to get to you, there's another little token coming along which the gang felt you might enjoy. They appreciate very much all you've done for our club.

Students in control of student activities during the year were as follows: Bill Finch, President, Sem. 1, Steve Miller, Vice President, Mike Quint, recording secretary and Riad Kattuah, and Dave Wasden, corresponding secretaries. Duane Erway, served as vice president during Sec. 1, and field trip chairman during Sec. 2. Ray Crum had that duty during Sem. 1.

Chicago

Attendance at chapter meetings during the spring quarter of the year proved that engineers can be lured from their easy chairs in front of the TV screen if programs are sufficiently tempting. In March both the speaker and subject had such an effect, the speaker, Vice Admiral (re-

tired) Francis P. Old, U.S.N., and his subject, "Toll Road Era". For the April session the program committee drafted after several months of negotiation for his services on one of his rare open dates. Mr. Thomas P. Collier, International Trade Consultant, and U.S. representative of the Plassey Co., Ltd., Engineers and Manufacturers, of Ilford, Essex, England, formerly Director of Foreign Operations for Armour Research Foundation. With a background of 20 years residence in foreign markets of the world, Mr. Collier was able to inform and entertain his audience as he talked on "exporting engineering know-how," with special emphasis on this country's responsibilities and opportunities in Latin America.

The May meeting was devoted to a panel discussion on the topic "Control Without Restraint," and the speakers were: Mr. Carl M. Preisinger and Mr. Clyde D. Wayne. The Moderator was Mr. Donald E. Black. "Engineering, A Way of Life" was the subject of a talk featured in the June meeting; the speaker was Mr. Louis J. Lucas, Industrial Management Engineer. These were all dinner meetings, held in the private banquet room at Toffinetti's Restaurant at 57 W. Randolph Street, Chicago.

Bakersfield College

Tom Merson, Secretary

The Bakersfield College Chapter of A.A.E. is noted for being one of the most active clubs on our campus, and this year is no exception. We held our semi-annual steak bake in the Kern River Canyon last fall and sponsored a girl in the Football Queen contest. Our candidate tied for first in the election but lost in the runoff. We staged our annual turkey affair at Thanksgiving to provide funds for our activities. We have a team in the current intra-mural basketball league and are planning to have a baseball throw and a mechanically moving target at the spring carnival. We have also engaged in some activities more on the educational side with field trips to the Pacific Gas and Electric Company's steam generating plant, the Monolith Portland Cement plant, and a weekend trip down to the



A group of Bakersfield College student engineers and their candidate for Football Queen taken some time ago, and reproduced with article to show the chapter's many activities. Selecting the Queen is an annual affair.

southland where we toured Lockheed Aircraft and the Kaiser Steel Mills at Fontana. In the evening the members got a chance to see a stage production or go to see Cinerama. I am enclosing a picture taken of the group while touring the Lockheed plant in Burbank.

This much we have already accomplished, yet we still have plans for even more activities in the spring. In addition to the carnival booth mentioned previously, we will hold our spring steak bake and fishing trip. The fishing trip is an annual tradition with the local club, coming sometime in May. The club pays for traveling expenses and everyone spends a weekend with a Coleman stove and a sleeping bag by a rushing Sierra river or stream. The whole club looks forward to this, as we have always managed to catch our share of fish. Also this spring we have two events planned with the local adult organization of professional engineers. We will attend one of their dinner meetings at a local restaurant and listen to a lecture on some aspect of engineering. Also arrangements are being made for the club to go on a joint tour of the Bakersfield Sewer Plant with the adult group of engineers. All this in addition to movies and lectures on various subjects scattered

throughout the year make for an active program. It is sometimes surprising that we find time to study with all these activities to take our time.

Special recognition should be given here to our advisor, counselor, and math instructor, Mr. Edwin H. Hemmerling, who acts as guide—a "coal" one because he anticipates pitfalls and suggests methods of avoiding them. If it were not for his most effective guidance, I am sure the club would not be so feverishly beaverish.

Thanks to Chaffey Engineers

The National Secretary wishes to thank the student engineers at Chaffey for the beautiful little paper weight in the form of an anvil inscribed: "To forge our friendship" . . . Chaffey College Engineers Club.

We have to keep our eye on the anvil to keep the weight on our own desk.

Thanks, Engineers!

Books For Engineers

The Gyroscope Applied, K. I. T. Richardson, M.A., Philosophical Library. \$15.00.

The purpose of this book is to explain the theory of the gyroscope and to describe its practical applications in a manner understandable by those interested in the subject.

Data Book for Civil Engineers, Vol. III, (Revised), Field Practice, by Elwyn E. Seelye, 2nd Edition. John Wiley & Sons. \$7.50.

This well known and valuable book has been extensively revised and enlarged. It retains the objectives of its predecessor, expanding them somewhat to cover present conditions. The material is arranged for maximum convenience and accessibility. An important section on surveying has been added, and an interesting and valuable discussion of soil behavior.

Fundamentals of Electromagnetic Waves, by Paul C. Shedd, Professor, Electrical Engineering, Newark College of Engineering. Prentice-Hall, Inc. \$5.65.

The purpose of the book is to familiarize students of electrical engineering and physics with the fundamental principles of electromagnetic fields and to lay a basis for a study of electromagnetic waves. No knowledge of mathematics beyond elementary calculus has been assumed. All mathematics beyond this point has been developed as needed, as an integral part of the book.

Fundamental Research in Administration, Horizons and Problems. Carnegie Press, 1953. \$2.00.

A book for management leaders, dealing with a wide range of retirement and economic problems by industrialists who took part in the informal round-table at the dedication of the new Graduate School of Industrial Administration, Carnegie Institute of Technology.

German-English Technical and Engineering Dictionary, Louis De Vries, Prof., Modern Languages, Iowa State College, McGraw-Hill Book Co. \$20.00.

This monumental work is the product of the last ten years, years that have witnessed revolutionary advances in engineering and technology, with thousands of many additions to technical nomenclature. It is a compendium of more than 125,000 entries, including glossaries of new words not contained in any other publication. An excellent dictionary serving the technical field.

The Microphysical World, William Wilson, Fellow, King's College, London, Philosophical Library. \$3.75.

The greater part of the book is devoted to present-day knowledge about atoms and molecules, their structure and behaviour. Protons, neutrons, electrons, Positrons, etc., are also discussed.

Auto Radio Service Data Manual, Howard W. Sams. Vol. 4, \$3.00.

A Photofact publication, covering 1953 and 1954 models of auto radio. Service technicians will find complete servicing instructions in this and preceding volumes.

Analyzing and Tracing TV Circuits is another Howard W. Sams Photofact Publication, written by Milton S. Kiviat, of value to service technicians. Chapter 10 of this manual contains a summary of the highlights of all preceding chapters.

Fundamentals of Color Television, William F. Boyce, BA-1 published by Howard W. Sams, retails at \$2.00, has been prepared to assist those interested in the technical aspect of television to understand the basic principles of electronic transmission and reception of color pictures without pronounced reference to mathematics.

The Practical Engineer Pocket Book, 65th edition, Edited by N. P. V.

Moore, B.Sc., A.C.G.I., D.I.C., A.M.
Inst. F. Pitman Pub. Corp. \$3.00.

Some important revisions have been made in this edition and a new section has been added on Industrial Hygiene, and the chapter on bearings and mechanical transmission has been almost entirely rewritten. Much valuable information is found between the covers of this 744 page booklet, including German-English, French-English and Spanish-English dictionaries, and lists of English and technical journals.

Cams, Design and Layout, L. Kasper, Chief M.E., Steel Heddle Manufacturing Co. Chemical Publishing Co. \$3.50.

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Storage Batteries, George Wood Vinal, Sc.D., formerly Physicist, National Bur. of Standards. 4th Ed. John Wiley & Sons. \$10.00.

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Transistor Audio Amplifiers, Richard H. Shea, Electronics Div., General Electric Co. John Wiley & Sons, Inc. \$6.50.

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Mechanical and Electrical Equipment for Buildings, 3rd ed. The late Charles Merrick Gay, Charles D. Van Fawcett, Prof. E.E., Univ. of Penn. and William J. McGuinness, Prof. Arch., Pratt Inst. John Wiley & Sons. \$8.50.

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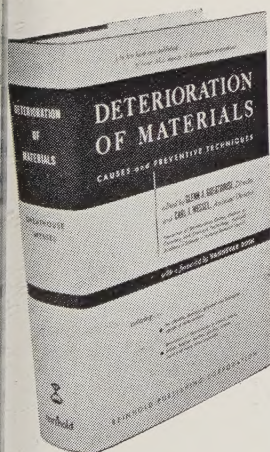
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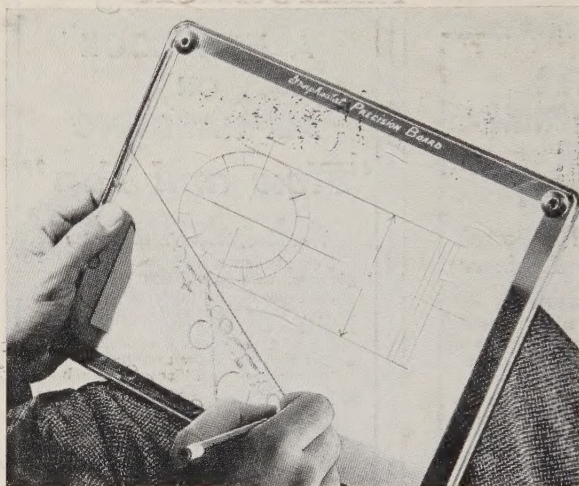
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